## What is claimed is:

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1. A hybrid lens comprising a refractive surface that refracts incident light and a diffractive surface that diffracts light exiting the lens, the diffracting surface designed by a sag satisfying the following Equation,

$$sag = \frac{f_D + m\lambda - \sqrt{f_D^2 + r^2}}{n-1},$$

wherein  $f_D$  is a distance from a center peak to a focal point of the hybrid lens, r is a height from a center axis to each peak of the hybrid lens, n is the refractive index of the hybrid lens,  $\lambda$  is the wavelength of incident light, and m is an integer.

2. The hybrid lens of claim 1, wherein the refractive surface has a low-order aspheric profile z satisfying the following Equation:

$$z(r) = \frac{cr^2}{1 + \sqrt{1 - (1 + k)c^2r^2}} + Ar^4 + Br^6 + Cr^8 + Dr^{10},$$

wherein c is a curvature of the refractive surface, k is a conic coefficient representing a shape of the refractive surface, and A, B, C and D are fourth, sixth, eighth and tenth aspheric coefficients respectively.

- 3. The hybrid lens of claim 1, wherein the diffractive surface has a minimum diffraction pitch of 3  $\,\mu$  m.
- 4. The hybrid lens of claim 1, wherein the refractive surface has a numerical aperture above 0.85.
  - 5. The hybrid lens of claim 1, wherein the diffractive surface has a depth  $L_m$  satisfying the following Equation:

$$L_m = \frac{\lambda}{n-1}.$$